MV-1/MV-2 Endoscope Disinfectors

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Model Overview

Features

- An optional mobile cart (Item CLM-1005) provides a station for disinfector mounting, storing of related accessories, disinfectant reservoir, and optional water filtration system.
- The compact size of the disinfectors saves space.
- All fluids are pumped continuously during fluid cycles.
- All fluid cycles are followed by an air purge cycle to clear internal tubing and channels of all fluids.
- Complete disinfection of all internal fluid tubing is provided.
- Each channel connector has an air pump.
- Two fresh water rinses follow the high-level disinfection cycle to provide maximum rinsing.
- The high-level disinfectant reservoir allows visual inspection of the disinfectant, easy access for disinfectant testing, and is removable for cleaning.
- The disinfectors are built without open vents and operate as closed systems to allow minimal fume emission. Data reports that less than 0.04ppm glutaraldehyde vapor is emitted during normal operation.
- Disinfectant can be pumped directly into and out of the reservoir using an automated transfer pump. This reduces operator exposure, and allows disinfectant disposal directly into containers, instead of into a drain.
  Note: Item CLM-1087 is a recommended LCG transfer pump.
- The disinfectors allow for installation of a water filtration system, which is recommended.
  Note: Item CLM-1076 is a recommended two-stage water filtration system which provides 1 micron at pre-filter and 0.2 micron at final filter.

Models

• **MV-1**	Disinfects one flexible endoscope per cycle and is equipped with four individual endoscope channel connectors. Each channel connector is connected directly to the pump without “Y” or “T” fittings. This results in maximum flow through channels regardless of the channel size.
• **MV-2**	Disinfects two flexible endoscopes in a single cycle. The unit is equipped with seven channel connectors, enabling the connection of each endoscope channel to a dedicated connector.

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Model Overview (Cont'd)

Additional Components:

The following components are supplied with the MV-1/MV-2 Endoscope Disinfectors:

MV-1	MV-2
• **User/service manual** • **Accessory bag (1)** • **Alcohol flushing adapter** • **Water hose** • **Drain hose** • **Power plug** • **Endoscope connector standard set (for Olympus** or **Pentax®** or **Fujinon flexible endoscopes)** • **Disinfectant holding tank** • **Disinfectant tank connection tubing and hose clamps**	• **User/service manual** • **Accessory bags (2)** • **Alcohol flushing adapter** • **Water hose** • **Drain hose** • **Power plug** • **Endoscope connector standard set (for Olympus** or **Pentax®** or **Fujinon flexible endoscopes)** • **Drain cover** • **Disinfectant holding tank** • **Disinfectant tank connection tubing and hose clamps**

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Compatible Components

The MV-1/MV-2 Endoscope Disinfectors are compatible with the following components.

Mobile Cart
- CLM-1005

LCG transfer pump
- CLM-1087

Two Stage Water Filtration System
- CLM-1076

MV-1 Software Upgrade Kit*
- MV-1 (5001)

MV-2 Software Upgrade Kit*
- MV-2 (5002)

***The software upgrade kit must be installed if Cidex® OPA is utilized as the disinfectant.**

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Cabling and Connectivity

Connection of the MV-1/MV-2 to ancillary equipment.

See MV-1/MV-2 Endoscope Disinfectors User/Service Manual

See also document #09-WI-0239, MV-1/MV-2 Endoscope Disinfectors Installation Procedure

Note: The pre-installation instructions in paragraphs 8.0 – 8.5 of document 09-WI-0239 **MUST** be completed before performing the following connections. Also refer to Chapters 2 and 3 in the MV-1/MV-2 Endoscope Disinfectors User/Service Manual.

1. Connection of the Drain to the MV-1/MV-2

✓ **Flexible drain hose**

- Connect the flexible drain hose to the white drain fitting on the back of the MV-1/MV-2, and attach the screw clamp.
- **Caution:** The drain must be 12 in. below the drain fitting on the disinfector, and loops in the drain hose must be eliminated to ensure that fluids drain thoroughly. Incomplete draining will result in dilution of the LCG and/or inadequate rinsing of the endoscope.

2. Connection of the LCG Reservoir to the MV-1/MV-2

✓ **LCG Reservoir**

- The LCG reservoir can be installed either under the counter top, or on the bottom of the mobile cart.
- **Caution:** The LCG reservoir must be placed below the MV-1/MV-2 basin. Incorrect placement of the reservoir may cause the LCG to seep back into the MV-1/MV-2 basin.
- Connect the cut ends (without fittings) of the LCG reservoir tubes (Item CLM-1000) to the barbed fittings on the LCG reservoir. Each tube can be connected to either fitting.
- Attach the screw clamps provided.
- Connect the LCG reservoir tubing ends with right angle male quick-release connectors to the quick-release connectors labeled **Solution/In** and **Solution/Out** on the back of the MV-1/MV-2. Each quick release connector on the tube end can be connected to either quick-release connector on the MV-1/MV-2.

3. Connection of the Power Cord to the MV-1/MV-2

✓ **Power Cord**

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- **Caution:** If the electrical outlet is adjacent to the water supply, a ground-fault circuit interrupter (GFCI) should be used.
- Plug one end of the power cord securely into the power entry module on the right side of the MV-1/MV-2.
- Plug the other end of the power cord into a standard 110 VAC outlet.

4. MV-1/MV-2 Drain Screen/Drain Cover Installation

✓ **Drain Screen/Drain Cover**

- Remove the packaging label from the drain screen and make sure the drain screen is in place.
- Place the white cover over the drain screen. It should fit behind the drain bar.
- **Caution:** Do not attempt to lift up the MV-1/MV-2 using the drain bar. Damage to the MV-1/MV-2 may result.

5. Connection of the Channel Connectors to the MV-1/MV-2. Refer to the MV-1/MV-2 Connector Matrix for a listing of endoscopes and their corresponding channel connectors.

✓ **Channel Connectors**

- Attach the channel connectors to the quick-release connectors in the MV-1/MV-2 basin. Be sure to press them in until they click into place.

6. Accessory Bag Placement

✓ **Accessory Bag Placement**

- Place the accessory bag into the MV-1/MV-2.
- **Caution:** Do not place the MV-1/MV-2 accessory bag over the drain screen as it might impede thorough draining.
- **Caution:** Do not hang the accessory bag over the liquid-level switch as it might impair proper level measurement.

7. Connection of the Water Filtration System (CLM-1076) to the Water Supply

✓ **Water Filtration System (CLM-1076)**

- **Note:** In order to comply with the recommendations of your hospital's infection control committee, and national and local guidelines and policies, it may be necessary to disinfect or sterilize the MV-1/MV-2 and the water filtration system. Instructions for this are provided in paragraphs 8.18 and 8.19 of document # 09-WI-0239. Also see the MV-1/MV-2 Endoscope Disinfectors User/Service Manual.

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Cabling and Connectivity (continued)

- **Note:** The water filtration system should be installed in a convenient location within three feet of the MV-1/MV-2, or inside the mobile cart on the right side.
- **Note:** The location of the water filtration system should allow for ease in system disinfection and filter changing.
- **Caution:** Do not install the water filtration system near an electrical outlet.
- Tap into the water line. This must be done by qualified personnel.
- Connect the water line to the female quick-connect fitting on the pre-filter side of the water filtration system.

8. Connection of the Water Filtration System (CLM-1076) Hose to the MV-1/MV-2

✓ **Water Filtration System (CLM-1076) Hose**

- Connect the stainless steel hose between the hose fitting on the post-filter side of the water filtration system, and the blue hose fitting (water inlet) on the back of the MV-1/MV-2.

9. Installing the Filters in the Water Filtration System (CLM-1076)

✓ **Filters: Prefilter (CF01-0017) , Postfilter (CF01-0018), or Prefilter and Postfilter Set (CF01-0007)**

- **Caution:** Personal protective equipment should be worn to guard against reprocessing chemicals and potentially infectious material when performing this procedure. Wear appropriate equipment, such as: eye wear, face mask, moisture-resistant clothing, and chemical-resistant gloves that fit properly and are long enough so that skin is not exposed.
- **Note:** The filters in the water filtration system must be changed periodically in order for the system to operate properly. The following steps provide the instructions for removing and installing filters.
- The MV-1/MV-2 disinfectors require a minimum incoming water pressure of 40 psi (2.8 bar) as indicated by the reading on gauge #1. When the reading on gauge #1 is normal and the reading on gauge #3 drops below 40 psi, it is likely that one or both of the filters must be changed.
- Read the gauges to determine which filter must be changed. In accordance with the instructions in the following steps, change the filter that is between the two gauges indicating the largest drop in water pressure. If the reading on gauge #3 is not restored to 40 psi, then replace the other filter.
- **Note:** Factory supplied replacement parts and filters must be used to assure proper operation and efficiency of the MV-1/MV-2 disinfectors. Filters must be dry when installed.
- **Note:** Factory supplied replacement parts and filters must be used to assure proper operation and efficiency of the MV-1/MV-2 disinfectors. Filters must be dry when installed.

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Cabling and Connectivity (continued)

- **Note:** Filter part numbers are as follows:
  Prefilter – CF01-0017
  Postfilter – CF01-0018
  Prefilter and Postfilter Set – CF01-0007
- Turn OFF the water supply to the water filtration system at the source.
- Press START on the control panel of the MV-1/MV-2 to remove pressure from the water filtration system canisters.
- Press STOP on the MV-1/MV-2 control panel.
- Rinse the canister thoroughly.
- If the prefilter has been removed, place the new prefilter into the clear prefilter housing. Both ends of this filter are open and have black rubber gaskets installed. Make sure the gaskets are seated in the ends of the filter and are centered when the filter is inserted into the housing.
- If the postfilter has been removed, place the new postfilter into the blue postfilter housing with the black O-ring facing UP, and the closed end facing DOWN. Make sure the O-ring is securely fastened to the peg at the top of the housing. It may be necessary to moisten the O-ring with water or a water-based lubricant.

10. Connection of the MV-1/MV-2 to the Water Supply when the Water Filtration System is NOT used

✓ **Water Line to MV-1/MV-2**

- Using the water filtration system is optional. If the water filtration system is not used, connect the water line to the stainless steel hose supplied with the MV-1/MV-2. Connect the stainless steel hose to the blue hose fitting (water inlet) on the back of the MV-1/MV-2.

11. Connection of the LCG Transfer Pump (CLM-1087) to the Water Filtration System

✓ **LCG Transfer Pump**

- **Caution:** Personal protective equipment should be worn to guard against reprocessing chemicals and potentially infectious material when performing this procedure. Wear appropriate equipment, such as: eye wear, face mask, moisture-resistant clothing, and chemical-resistant gloves that fit properly and are long enough so that skin is not exposed.
- Disconnect the water line from the inlet side of the water filtration system.
- Connect the outlet tubing of the LCG transfer pump to the inlet side of the water filtration system.
- Insert the inlet tubing of the LCG transfer pump into a one-gallon container of disinfectant.

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Reprocessing

See MV-1/MV-2 Endoscope Disinfectors User/Service Manual

See also document #09-WI-0241, MV-1/MV-2 Endoscope Disinfectors Preventive Maintenance.

In order to comply with the recommendations of your hospital's infection control committee, and national and local guidelines and policies, it may be necessary to disinfect or sterilize the MV-1/MV-2 and the water filtration system. Instructions for this are provided in paragraphs 8.18 and 8.19 of document # 09-WI-0239. Also see the MV-1/MV-2 Endoscope Disinfectors User/Service Manual.

All endoscopes must be precleaned before placement in the MV-1/MV-2. Follow the manufacturer's instructions and established professional guidelines (see page 5 in the MV-1/MV-2 Endoscope Disinfectors User/Service Manual) for further instructions on the cleaning steps that must be performed prior to placing an endoscope into the MV-1/MV-2.

Caution: Effective reprocessing can only be accomplished by complete manual cleaning of the endoscope followed by exposure to a LCG.

Caution: Duodenoscopes with elevator wire channels require additional cleaning and disinfection steps. It is essential that the elevator wire channels of these endoscopes be manually cleaned, rinsed, and disinfected before the endoscope is placed in the MV-1/MV-2. Refer to the duodenoscope's reprocessing manual for detailed instructions on cleaning, rinsing, and disinfecting the elevator wire channel.

Installation

1. Are all standard set components present?

✓ Check the Standard Set list to be sure that all parts are present.

✓ If parts are missing, contact Olympus.

See document #09-WI-0237 Product Specifications.

2. Is all ancillary equipment compatible?

✓ Check the Compatible Components list to be sure all ancillary equipment will work with the endoscope.

3. Has the equipment been properly disinfected or sterilized?

✓ Follow the instructions under Reprocessing to disinfect or sterilize all equipment.

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Preventive Maintenance

Before attempting to perform preventive maintenance on the MV-1/MV-2 and ancillary equipment, thoroughly review and understand the information presented in the MV-1/MV-2 User/Service Manual, and the instruction manuals for the ancillary equipment.

Preventive Maintenance Safety Measures for the MV-1/MV-2 and Ancillary Equipment:

Personal protective equipment should be worn to guard against reprocessing chemicals and potentially infectious material when performing preventive maintenance procedures. Wear appropriate equipment, such as: eye wear, face mask, moisture-resistant clothing, and chemical-resistant gloves that fit properly and are long enough so that skin is not exposed.

Factory supplied replacement parts and filters must be used to assure proper operation and efficiency of the MV-1/MV-2.

Do not use gauze, cotton swabs, or other lint-producing cleaning aids on the MV-1/MV-2. These materials shed fibers that can become caught in the channels of endoscopes, or in the components of the MV-1/MV-2.

Do not use products that contain alcohol when cleaning the lid of the MV-1/MV-2. Alcohol may cause crazing of the acrylic windows.

After discarding used disinfectant, remove the cover of the LCG reservoir. Rinse and wipe the cover, basin, and reservoir with a clean cloth. Do not use paper towels as they may generate particulate matter that could interfere with the function of the MV-1/MV-2.

Do not open the MV-1/MV-2 lid during operation.

Never operate the MV-1/MV-2 without the drain screen in place. Debris might be recycled into the LCG and /or clog the endoscope channels.

Do not use high-level disinfectant neutralizing agents in the MV-1/MV-2. If disinfectant neutralization is required at the facility, the high-level disinfectant must be transferred to an alternate container. Neutralizing agents will adversely affect the performance of the MV-1/MV-2.

All disinfectants must be monitored for effectiveness a minimum of once a day.

Strictly follow the disinfectant manufacturer's labeling, or the disinfectant reuse life could be significantly affected. Do not use disinfectants beyond the time period specified on the manufacturer's label (e.g., do not use a 14-day disinfectant beyond 14 days, even if potency test results are favorable). Disinfectants may lose effectiveness before the end of the reuse life.

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Preventive Maintenance (Cont'd)

Refer to Chapter 5 in the MV-1/MV-2 Endoscope Disinfectors User/Service Manual. Also, refer to document # 09-WI-0240, MV-1/MV-2 Endoscope Disinfectors Confidence Test.

In order to ensure correct operation of the MV-1/MV-2, the following quality assurance procedures must be performed on- the MV-1/MV-2 EACH day prior to the first cycle.

Contact Olympus if these procedures fail to yield the expected results.

Operational Phase	Area Of Concern	Recommendation
Before Operating	MV-1/MV-2 Water Flow	A channel connector should be connected to each port in the MV-1/MV-2 basin. • Turn the MV-1/MV-2 power switch **ON.** The power switch is located on the right side of the MV-1/MV-2. • Press **START** on the MV-1/MV-2 control panel. • Wait for the pump to feed water through the channel connectors. • Confirm that water is flowing properly through each connector. • **Note:** Flow volume will vary depending upon the type of channel connector used. The water flow through the male luer lock connector should be approximately 100 cc (4 oz.) in less than 15 seconds. • If the water flow through any connector appears to be inadequate, check it again using a male luer lock connector. This will determine if the inadequate water flow is caused by the connector or the MV-1/MV-2. • **Note:** Inadequate water flow may be caused by a clogged valve or a malfunction of the main pump. • Press **STOP** on the MV-1/MV-2 control panel. • **Note:** Contact Olympus if water does not flow properly through all of the channel connectors.
Before Operating	MV-1/MV-2 Air Flow	• Press **MANUAL, DRAIN,** and then **START** on the MV-1/MV-2 control panel. • While holding all tubing in the MV-1/MV-2 basin under water, confirm that there is vigorous bubbling in all tubing. • Completely drain the water from the MV-1/MV-2 basin. • Press **STOP** on the MV-1/MV-2 control panel. • **Note:** Contact Olympus if air does not flow properly through ALL tubing.

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Preventive Maintenance (Cont'd)

Operational Phase	Area Of Concern	Recommendation
Before Operating	LCG Level	• Mark the correct level on the LCG reservoir after filling it with LCG. Examine this level daily to ensure that the level is not changing significantly. Keep a minimum of 4-5 gallons in the LCG reservoir at all times, depending on the MV model. • The liquid level should be well above the minimum fill level. An increase in the level could mean that the LCG has been diluted. A significant drop in the level indicates a loss of LCG.
Before Operating	LCG Level (cont'd)	• A minimum of 4 gallons (15.1 L) of LCG should be in the LCG reservoir of the MV-1. • A minimum of 5 gallons (18.9 L) of LCG should be in the LCG reservoir of the MV-2. • **Note:** Recommendations for the disposal of LCG vary between formulations and locations. Follow the policies and procedures applicable to the facility.
Before Operating	LCG Concentration	The LCG must be tested daily to ensure that it contains an adequate level of active ingredient. Use the test strips recommended by the LCG manufacturer according to the manufacturer's instructions, and the policies and procedures of the facility to test the potency of the LCG. • If the minimum effective concentration (MEC) is below the minimum allowable, discard and replace the LCG. **Note:** Some LCGs with extended shelf lives may contain surfactants, which can lead to foaming. Such products may produce unacceptable amounts of foam when used in the MV-1/MV-2, and could affect the fluid-level sensor. Always use low-foaming detergents and LCGs in the MV-1/MV-2.
Before Operating	MV-1/MV-2 Drain Screen	• Remove the drain cover and rinse out the drain screen. • Make sure the drain screen is free of any debris. • Replace the drain screen and drain cover. • **Caution:** Ensure the drain screen and drain cover are in place whenever the MV-1/MV-2 is in operation. If the drain screen and cover are not in place, debris might be recycled into the LCG and cause clogging of the endoscope channels and the MV-1/MV-2 components.

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Preventive Maintenance (Cont'd)

Operational Phase	Area Of Concern	Recommendation
Before Operating	Water Filtration System (CLM-1076)	The filters in the water filtration system must be changed periodically in order for the system to operate properly. The MV-1/MV-2 disinfectors require a minimum incoming water pressure of 40 psi (2.8 bar) as indicated by the reading on gauge #1. • Check the gauges located on the water filtration system. When the reading on gauge #1 is normal, and the reading on gauge #3 drops below 40 psi, it is likely that one or both of the filters must be changed. Read the gauges to determine which filter must be changed. In accordance with paragraphs 8.15.7 – 8.15.13 in document # 09-WI-0239, change the filter that is between the two gauges indicating the largest drop in water pressure. If the reading on gauge #3 is not restored to 40 psi, then replace the other filter.
Other Tips	Endoscope Preparation	**Caution:** Endoscopes must be cleaned prior to disinfection. Always clean and leak test the endoscope as described in the endoscope's instruction manual before placing it in the MV-1/MV-2. Follow the manufacturer's instructions and established professional guidelines for cleaning and disinfection of endoscopes.

See document #09-WI-0241, MV-1/MV-2 Endoscope Disinfectors Preventive Maintenance.

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Troubleshooting

The troubleshooting information presented here lists the most-common problems that can occur, and possible solutions to these problems. Some of the solutions given may require the intervention of a trained service engineer. If this is the case, contact Olympus.

The following documents are referenced in this section. Click on the document title below to open the document.

- MV-1/MV-2 Endoscope Disinfectors User/Service Manual
- Document #09-WI-0240, MV-1/MV-2 Endoscope Disinfectors Confidence Test

Troubleshooting: Rinse Alarm

1. Is the rinse alarm activated?

- ✓ Make sure the water valve is closed.
- ✓ Check the water pressure, it should be at 40 – 60 psi.
- ✓ Check the filters to be sure they are not clogged. Replace the filters if they are clogged.
- ✓ Make sure the water hose is not kinked.
- ✓ Check the inlet valve screen for debris, and remove any debris found.
- ✓ Make sure the float tower is uncovered.
- ✓ Check the drain solenoid for leakage. Rebuild the drain solenoid if necessary.
- ✓ Make sure the water solenoid and the float sensor are not defective. Replace these devices if necessary.

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MV-1/MV-2 Endoscope Disinfectors

Frequently Asked Questions

Troubleshooting: MV-1/MV-2 Stopped in Mid-Cycle

1. Has the MV-1/MV-2 stopped in mid-cycle?

- ✓ There could be a fluctuation in the power source voltage. If this is suspected, contact the facility's maintenance department.
- ✓ Check the power cord to be sure it is securely connected.
- ✓ The MV-1/MV-2 rinse alarm could be activated. Refer to question #1.

Troubleshooting: LCG

1. Was the LCG lost through the overflow drain?

- ✓ Check to see if the MV-1/MV-2 is level. If necessary, adjust the legs of the MV-1/MV-2.
- ✓ Make sure any material or debris is not covering the float tower.
- ✓ Make sure that the float sensor is not defective. Replace the float sensor if necessary.

2. Is the LCG not completely filling the basin?

- ✓ Make sure the LCG tubing does not contain any kinks or bends.
- ✓ Ensure the LCG reservoir is filled to at least the minimum fill level.
- ✓ Check the LCG-In quick connectors to be sure that they are not worn or not fully inserted. If necessary, replace or reconnect the connectors.
- ✓ Check to see if the LCG is leaking through the drain. If so, contact Olympus.
- ✓ Check the operation of the OSC pumps. Replace one or more of the pumps if necessary.
- ✓ Make sure the float sensor is not defective. If necessary, replace the float sensor.

3. Is the LCG alarm activated?

- ✓ Refer to the possible solutions in question #2.

4. Is the LCG reservoir overfilling or is water left in the basin after the rinse cycle?

- ✓ Check the drain hose to make sure it is below the level of the drain connection on the back of the MV-1/MV-2.
- ✓ Make sure the drain hose is not kinked.
- ✓ Ensure that the drain screen is clear.

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Troubleshooting: LCG (Cont'd)

- ✓ Check the basin to see if the water drainage speed is fast enough. If the water drainage speed is too slow, contact Olympus.
- ✓ The motherboard inside the MV-1/MV-2 might not be activating the rinse cycle solenoid. Replace the motherboard if necessary.
- ✓ Check the drain solenoid coil. Replace the coil if it is necessary.
- ✓ Check the drain solenoid to see if it is draining fast enough. If drainage is too slow, contact Olympus.
- ✓ Check the "Solution Out" solenoid to be sure it is not leaking water. (This applies only to the LCG reservoir overfilling problem.) If there is water leakage, contact Olympus.

5. Is there loss of LCG during MV-1/MV-2 operation?

- ✓ If LCG is lost via the drain, contact Olympus.
- ✓ Check the drain screen to ensure that the drain is not blocked.
- ✓ Make sure the LCG OUT quick-connect is not leaking. If a leak is discovered, replace the O-ring or the quick-connect.
- ✓ Check the "Solution Out" solenoid to make sure it is draining fast enough.
- ✓ Make sure the MV-1/MV-2 is level. If not, adjust the legs of the MV-1/MV-2.
- ✓ The motherboard in the MV-1/MV-2 circuitry might be continuously activating the drain cycle. If this is the case, replace the motherboard.

Troubleshooting: Air/Water Flow

1. Is water running through the overflow?

- ✓ Check the float tower to be sure it is not covered.
- ✓ Make sure the MV-1/MV-2 is level. If not, adjust the legs of the MV-1/MV-2.
- ✓ Check the float sensor to see if it is operating properly. If necessary, replace the float sensor.

2. Is water overflowing from the basin?

- ✓ Make sure the MV-1/MV-2 is level. If not, adjust the legs of the MV-1/MV-2.
- ✓ Check the drainage. If the drainage is insufficient, contact the facility's maintenance department.

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Troubleshooting: Air/Water Flow (cont'd)

- ✓ Confirm that the water pressure is not too high. If necessary, reduce the water pressure to the recommended level.

3. Is air flowing through the channel connectors?

- ✓ Check the tubing and ensure the tubing is free of kinks or bends.
- ✓ Make sure the channel connectors are fully inserted.
- ✓ Ensure the check valve that is in line with the alcohol manifold is not leaking air. If this is the case, replace the check valve.
- ✓ Make sure the air pump is not defective. If necessary, replace the air pump.
- ✓ Check the internal air pump tubing to be sure it is not loose. If necessary, reconnect the tubing properly.
- ✓ If air is flowing instead of fluid, the motherboard might be defective. If necessary, replace the motherboard.

4. Is there fluid flowing through the channel connectors?

- ✓ Check the channel connector tubing and make sure it is free of kinks or bends.
- ✓ Make sure the channel connectors are fully inserted.
- ✓ If the main pump is not activated by the motherboard, replace the motherboard.
- ✓ Make sure the main pump rotates. If it does not, replace the main pump.
- ✓ If air is flowing instead of fluid, the motherboard might be defective. If necessary, replace the motherboard.

Troubleshooting: MV-1/MV-2 Control Panel

1. Are the lights off on the MV-1/MV-2 control panel?

- ✓ Check the power cord to be sure it is connected.
- ✓ Make sure the MV-1/MV-2 power switch is turned on.
- ✓ Check the fuses. If necessary, replace the fuses.
- ✓ Check the motherboard. If necessary, replace the motherboard.

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Troubleshooting: MV-1/MV-2 Control Panel (Cont'd)

- ✓ Ensure the MV-1/MV-2 control panel is operating properly. If necessary, replace the MV-1/MV-2 control panel.
- ✓ Check the ribbon cables within the MV-1/MV-2 to be sure that they are connected properly and are not loose.

Troubleshooting: Returning the Unit for Repair

If the MV-1/MV-2 Endoscope Disinfectors must be returned to Medivators, Inc. for repair or replacement, contact Olympus by calling telephone # 1-800-848-9024. Choose the appropriate prompt for connection to Medivators, Inc.

A "Hot Swap" will be performed, which means that Medivators, Inc. will provide the facility with a loaner unit to replace the disabled MV-1/MV-2 until the unit is either repaired or replaced. Medivators, Inc. will provide shipping instructions.

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